Residential

Decks

2012 NC Residential Code
AM106 and AM111 Tables – southern pine spans. (140610 Item B-11)

Section AM106: ***Delete partial reprint of Table R502.3.1(2) without substitution. (Only the partial reprints in Appendix M are deleted.)***

Figure AM111: ***Delete partial reprint of Table R502.5(1) without substitution. (Only the partial reprints in Appendix M are deleted.)***

The effective date of this Rule is May 1, 2015.
The Statutory authority for Rule-making is G. S. 143-136; 143-138.

APPENDIX M
WOOD DECKS

This appendix is a North Carolina addition to the 2009 International Residential Code. There will be no underlined text. (The provisions contained in this appendix are adopted as part of this code.)

SECTION AM101
GENERAL

AM101.1 General. A deck is an exposed exterior wood floor structure which may be attached to the structure or freestanding. Roofed porches (open or screened-in) may be constructed using these provisions.

AM101.2 Deck design. Computer deck design programs may be accepted by the code enforcement official.

SECTION AM102
FOOTERS

AM102.1 Footers. Support post shall be supported by a minimum footing per Figure AM102 and Table AM102.1. Minimum footing depth shall be 12-inches below finished grade per Section R403.1.4. Tributary area is calculated per Figure AM102.1.

SECTION AM103
FLASHING

AM103.1 Flashing. When attached to a structure, the structure to which attached shall have a treated wood band for the length of the deck, or corrosion-resistant flashing shall be used to prevent moisture from coming in contact with the untreated framing of the structure. Aluminum flashing shall not be used in conjunction with deck construction. The deck band and the structure band shall be constructed in contact with each other except on brick veneer structures and where plywood sheathing is required and properly flashed. Siding shall not be installed between the structure and the deck band. If attached to a brick structure, neither the flashing nor a treated band for brick structure is required. In addition, the treated deckband shall be constructed in contact with the brick veneer. Flashing shall be installed per Figure AM103.

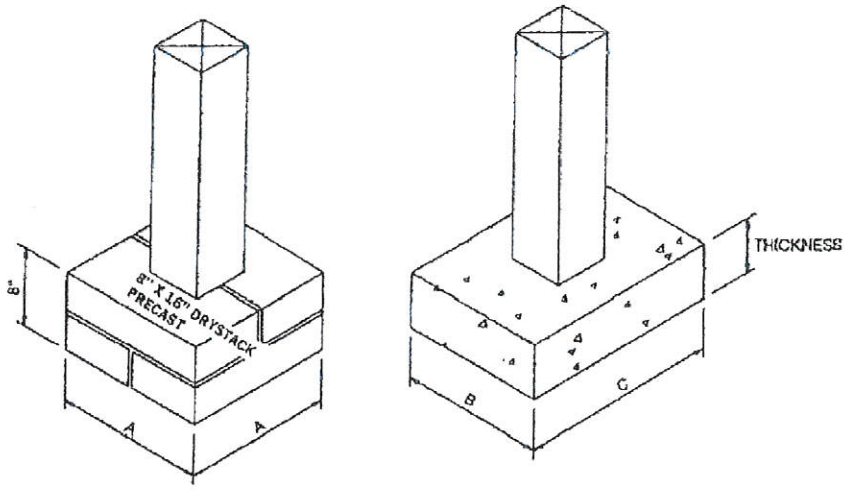


FIGURE AM102

TABLE AM102.1
FOOTING TABLE[a,b,c]

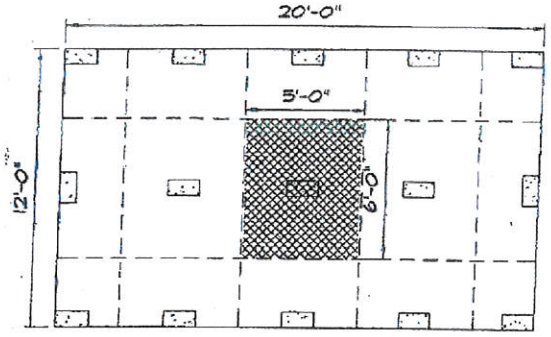
SIZE (inches)		TRIBUTARY AREA	THICKNESS (inches)	
A x A	B x C	(sq. ft.)	Precast	Cast-in-Place
8 × 16	8 × 16	36	4	6
12 × 12	12 × 12	40	4	6
16 × 16	16 × 16	70	8	8
—	16 × 24	100	—	8
—	24 × 24	150	—	8

For SI: 1 inch = 25.4 mm, 1 square foot = 0.0929 m².

a. Footing values are based on single floor and roof loads

b. Support post must rest in center $^1/_3$ of footer

c. Top of footer shall be level for full bearing support of post



Note: Tributary area of shaded section on free standing deck shown is 5' × 6' = 30 sq. ft. Code will require a minimum footer of 8" × 16" per Table AM102.1.

FIGURE AM102.1

SECTION AM104 DECK ATTACHMENT

NOTE: SEE AMMENDMENT NEXT SHEET

AM104.1 Deck attachment. When a deck is supported at the structure by attaching the deck to the structure, the following attachment schedules shall apply for attaching the deck band to the structure.

AM104.1.1 All structures except brick veneer structures.

FASTENERS	8' MAX JOIST SPAN[a]	16' MAX JOIST SPAN[a]
$^5/_8$" Hot dipped galv. bolts with nut and washer[b] and 12d Common hot dipped galv. nails[c]	1 @ 3'-6" o.c. and 2 @ 8" o.c.	1 @ 1'-8" o.c. and 3 @ 6" o.c.

a. Attachment interpolation between 8 foot and 16 foot joists span is allowed.
b. Minimum edge distance for bolts is $2^1/_2$ inches.
c. Nails must penetrate the supporting structure band a minimum of $1^1/_2$ inches.

AM104.1.2 Brick veneer structures.

FASTENERS	8' MAX JOIST SPAN[a]	16' MAX JOIST SPAN[a]
$^5/_8$" Hot dipped galv. bolts with nut and washer[b]	1 @ 2'-4" o.c.	1 @ 1'-4" o.c.

a. Attachment interpolation between 8 foot and 16 foot joist span is allowed.
b. Minimum edge distance for bolts is $2^1/_2$ inches.

AM104.1.3 Masonry ledge support. If the deck band is supported by a minimum of $^1/_2$ inch masonry ledge along the foundation wall, $^5/_8$ inch hot dipped galvanized bolts with washers spaced at 48 inches o.c. may be used for support.

AM104.1.4 Other means of support. Joist hangers or other means of attachment may be connected to house band and shall be properly flashed.

SECTION AM105 GIRDER SUPPORT AND SPAN

AM105.1 Girder support and span. Girders shall bear directly on support post with post attached at top to prevent lateral displacement or be connected to the side of posts with two $^5/_8$ inch hot dipped galvanized bolts with nut and washer. Girder spans are per Tables R502.5(1) and (2). Girder support may be installed per Figure AM105 for top mount; Figure AM105.1 for side mount and Figure AM105.2 for split girder detail. Girders may also be cantilevered off ends of support post no more than 1 joist spacing or 16 inches, whichever is greater per Figure AM105.3.

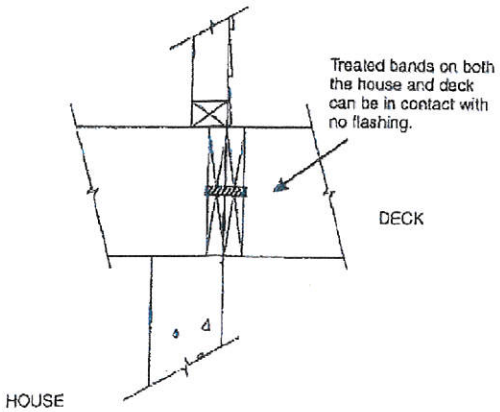
SECTION AM106 JOIST SPANS AND CANTILEVERS

AM106.1 Joist spans and cantilevers. Joists spans shall be based upon Table R502.3.1(2) with 40 lbs per sq. ft. live load and 10 lbs per sq. ft. dead load. Floor joists for exterior decks may be cantilevered per Table R502.3.3 (1).

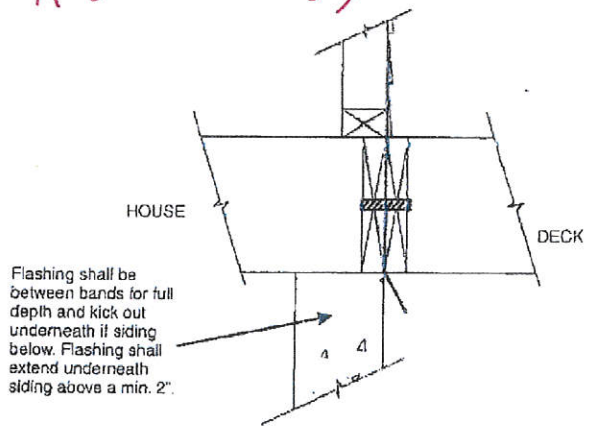
SPACING	2 x 6	2 x 8	2 x 10	2 x 12
12 inches	10-9	14-2	18-0	21-9
16 inches	9-9	12-10	16-1	18-10
19.2 inches	9-2	12-1	14-8	17-2
24 inches	8-6	11-0	13-1	15-5

Partial reprint of Table R502.3.1(2), #2 SYP only joist spans (ft-in)

SEE AMMENDED TABLE R 502.3.1(2), ATTACHED →



NO FLASHING-TREATED



FLASHING BETWEEN

FIGURE AM103

2012 NC Residential Code
Appendix AM104.1 Deck attachment. (131210 Item B-5)

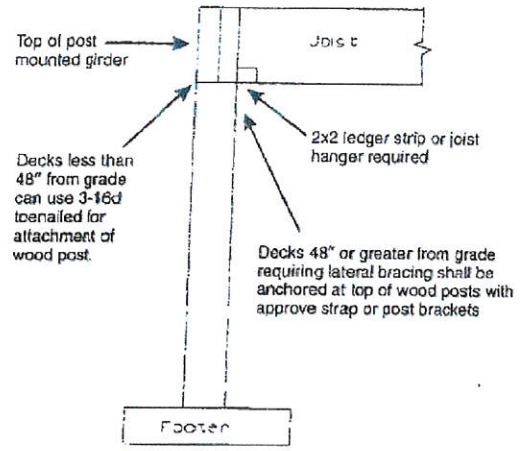
AM104.1 Deck attachment. When a deck is supported at the structure by attaching the deck to the structure, the following attachment schedules shall apply for attaching the deck band to the structure.

AM104.1.1 All structures except brick veneer structures

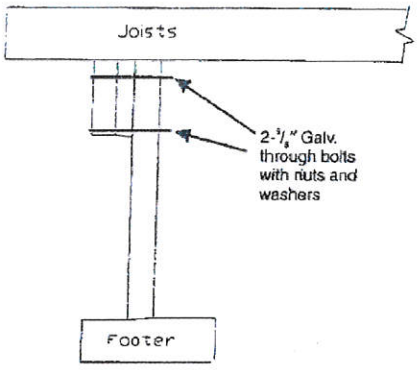
METHOD	FASTENERS	8' MAX JOIST SPAN	16' MAX JOIST SPAN
1	5/8" Hot dipped galv. bolts with nut and washer[b] and 12d Common hot dipped galv. nails[c]	1@3'-6" o.c. and 2@8" o.c.	1@1'-8" o.c. and 3@6" o.c.
OR			
2	Self-Drilling Screw Fastener[d]	12" o.c. staggered	6" o.c. staggered

a. Attachment interpolation between 8 foot and 16 foot joists span is allowed.
b. Minimum edge distance for bolts is 2½ inches.
c. Nails must penetrate the supporting structure band a minimum of 1½ inches.
d. Self-drilling screw fastener shall be an approved screw having a minimum shank diameter of 0.195" and a length long enough to penetrate through the supporting structure band. The structure band shall have a minimum depth of 1-1/8". Screw shall have an evaluated allowable shear load for Southern Pine to Southern Pine lumber of 250 pounds and shall have a corrosion resistant finish equivalent to hot dipped galvanized. Minimum edge distance for screws is 1-7/16". A maximum of ½" thick wood structural panel is permitted to be located between the deck ledger and the structure band.

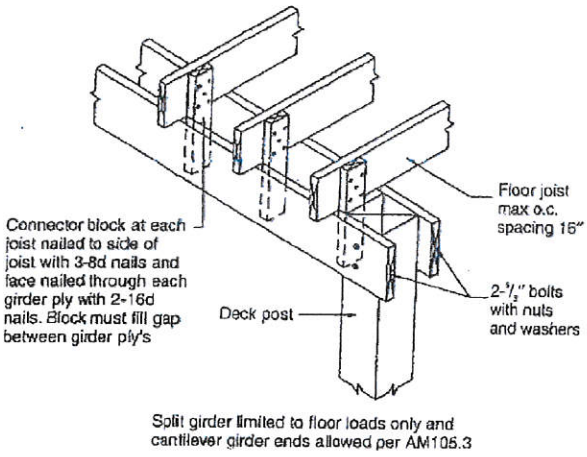
The delayed effective date of this Rule is January 1, 2015.
The Statutory authority for Rule-making is G. S. 143-136; 143-138.



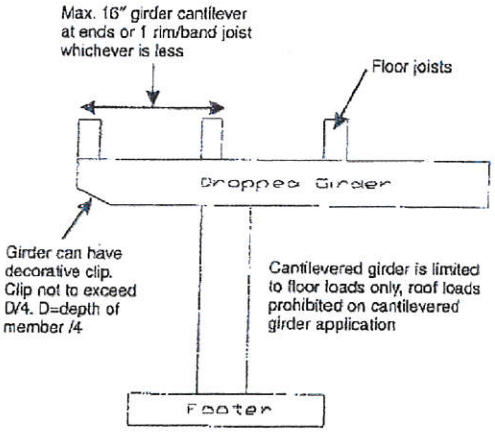
TOP MOUNT/FLUSH
FIGURE AM105



SIDE MOUNT DROPPED GIRDER
FIGURE AM105.1



SPLIT GIRDER DETAIL
FIGURE AM105.2



CANTILEVERED DROPPED GIRDER DETAIL
FIGURE AM105.3

SECTION AM107
FLOOR DECKING

AM107.1 Floor decking. Floor decking shall be No. 2 grade treated Southern Pine or equivalent. The minimum floor decking thickness shall be as follows:

SPACING	DECKING (nominal)
12" o.c	1" S4S
16" o.c.	1" T&G
19.2" o.c.	1 1/4" S4S
24"-36" o.c.	2" S4S

SECTION AM108
POST HEIGHT

AM108.1 Post height. Maximum height of deck support posts as follows:

Post Size[a]	Max. Post Height[b,c]
4x4	8'-0"
6x6	20'-0"

a. This table is based on No. 2 Southern Pine posts.
b. From top of footing to bottom of girder.
c. Decks with post heights exceeding these requirements shall be designed by a registered design professional.

SECTION AM109
DECK BRACING

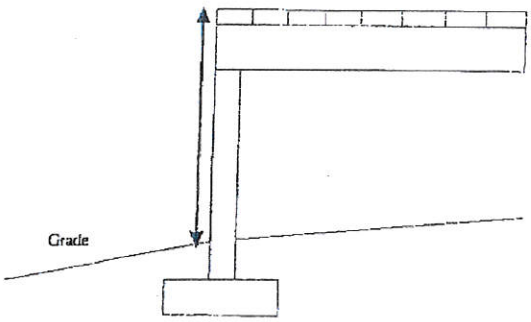
AM109.1 Deck bracing. Decks shall be braced to provide lateral stability. The following are acceptable means to provide lateral stability.

AM109.1.1. When the deck floor height is less than 4'-0" above finished grade per Figure AM109 and the deck is attached to the structure in accordance with Section AM104, lateral bracing is not required.

AM109.1.2. 4x4 wood knee braces may be provided on each column in both directions. The knee braces shall attach to each post at a point not less than $^1/_3$ of the post length from the top of the post, and the braces shall be angled between 45 degrees and 60 degrees from the horizontal. Knee braces shall be bolted to the post and the girder/double band with one $^5/_8$ inch hot dipped galvanized bolt with nut and washer at both ends of the brace per Figure AM109.1

AM109.1.3. For freestanding decks without knee braces or diagonal bracing, lateral stability may be provided by embedding the post in accordance with Figure AM109.2 and the following:

POST SIZE	MAXIMUM TRIBUTARY AREA	MAXIMUM POST HEIGHT	EMBEDMENT DEPTH	CONCRETE DIAMETER
4x4	48 SF	4'-0"	2'-6"	1'-0"
6x6	120 SF	6'-0"	3'-6"	1'-8"



Less than 4' (decking to grade) and attached to structure no bracing required

FIGURE AM109

AM109.1.4. 2x6 diagonal vertical cross bracing may be provided in two perpendicular directions for freestanding decks or parallel to the structure at the exterior column line for attached decks. The 2x6's shall be attached to the posts with one $^5/_8$ inch hot dipped galvanized bolt with nut and washer at each end of each bracing member per Figure AM109.3.

AM109.1.5. For embedment of piles in Coastal Regions, see Chapter 45.

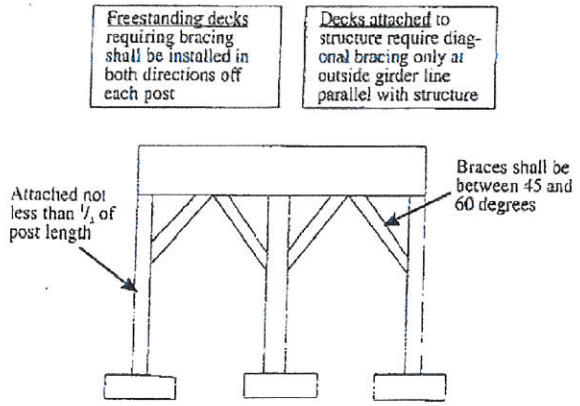


FIGURE AM109.1

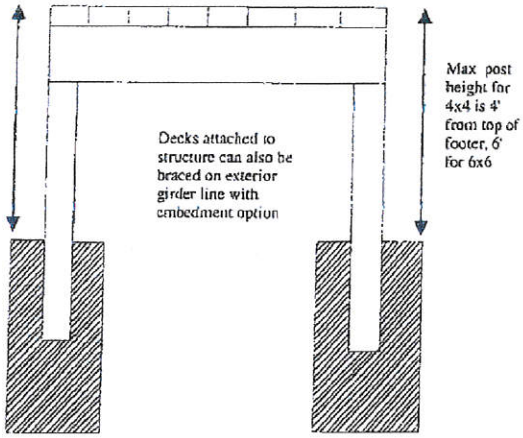


FIGURE AM109.2

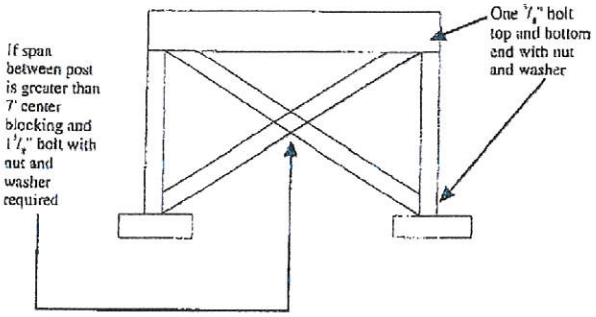
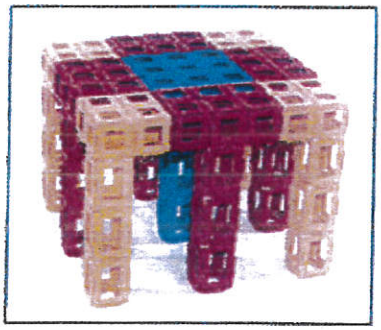


FIGURE AM109.3

Tributary area

The proportion of the floor or roof load bearing down on an individual support beam or column is estimated by dividing the total loaded surface into tributary areas corresponding to each particular support member. The following model shows how the tributary areas of a reinforced concrete slab are allocated to each of its supporting columns. The boundary of a support's tributary area is demarcated as half the distance to any adjacent supports.



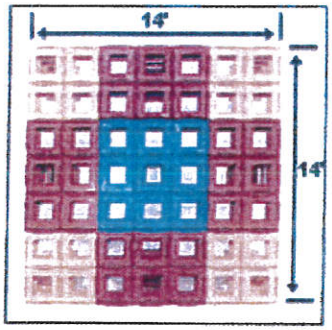


Fig. 208 - Tributary areas of columns supporting a concrete slab

each square is 2' x 2'

(training aid model)

The four corner columns and their corresponding tributary areas are colored yellow. The four perimeter columns and their areas are red. And the central column and area is blue.

Let's say the slab is 14 feet by 14 feet for a total area of 196 square feet. It has a dead load weight of 286 lbs./sq. ft. and is designed to carry a live load of 90 lbs./sq. ft. The following table calculates the total maximum anticipated load for each column position.

Column	Tributary area	Live load	Dead load	Total load	All columns
corner	4x4 = 16	16x90 = 1440	16x286 = 4576	6016 lbs.	24064 lbs.
perimeter	4x6 = 24	24x90 = 2160	24x286 = 6864	9024 lbs.	36096 lbs.
center	6x6 = 36	36x90 = 3240	36x286 = 10296	13536 lbs.	13536 lbs.
				Total	73696 lbs.

Table 8 - Tributary areas and loads for columns supporting a concrete slab

The table indicates that the central column bears more than twice the load of a corner column, and one and one-half times the load of a perimeter column, at the maximum design load. This is a very simplified presentation of the tributary area concept, which can get much more complex depending on the framing plan of the building.

If you were designing this structure you would need to combine this load data with other information on the maximum allowable deflection, critical buckling load, maximum tensile and compressive stress, maximum bending moment, safety factor, etc. in order to select the appropriate material and dimensions for its members.

Now let's see how structural members are combined to build complex residential, public, commercial, and industrial buildings.

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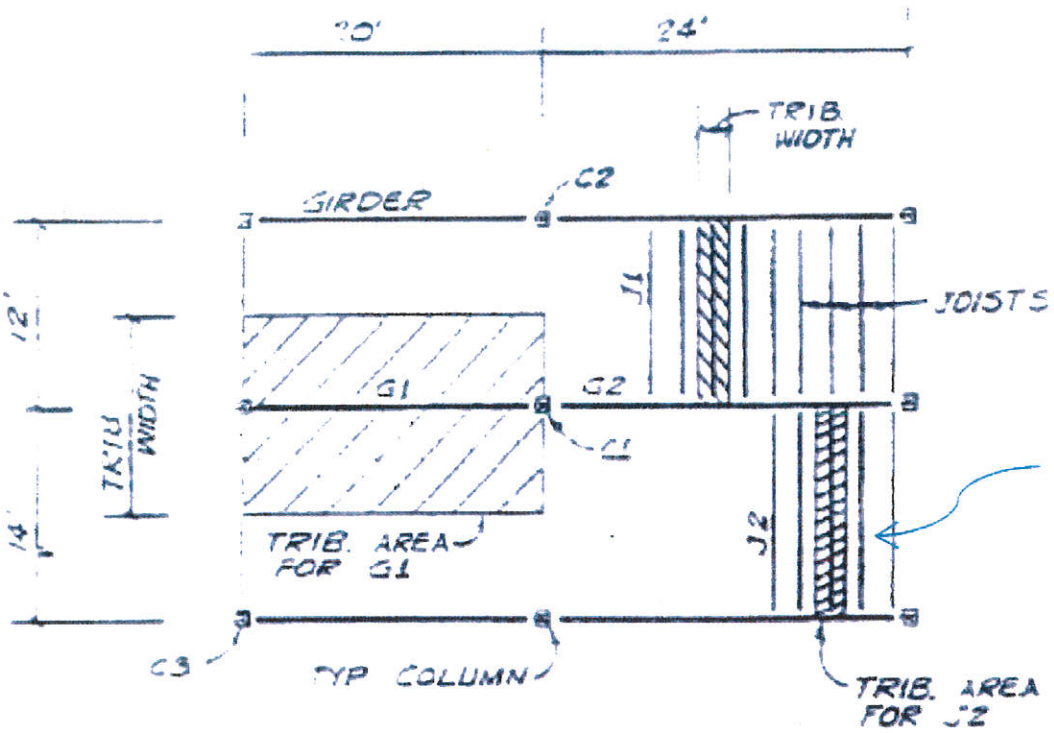
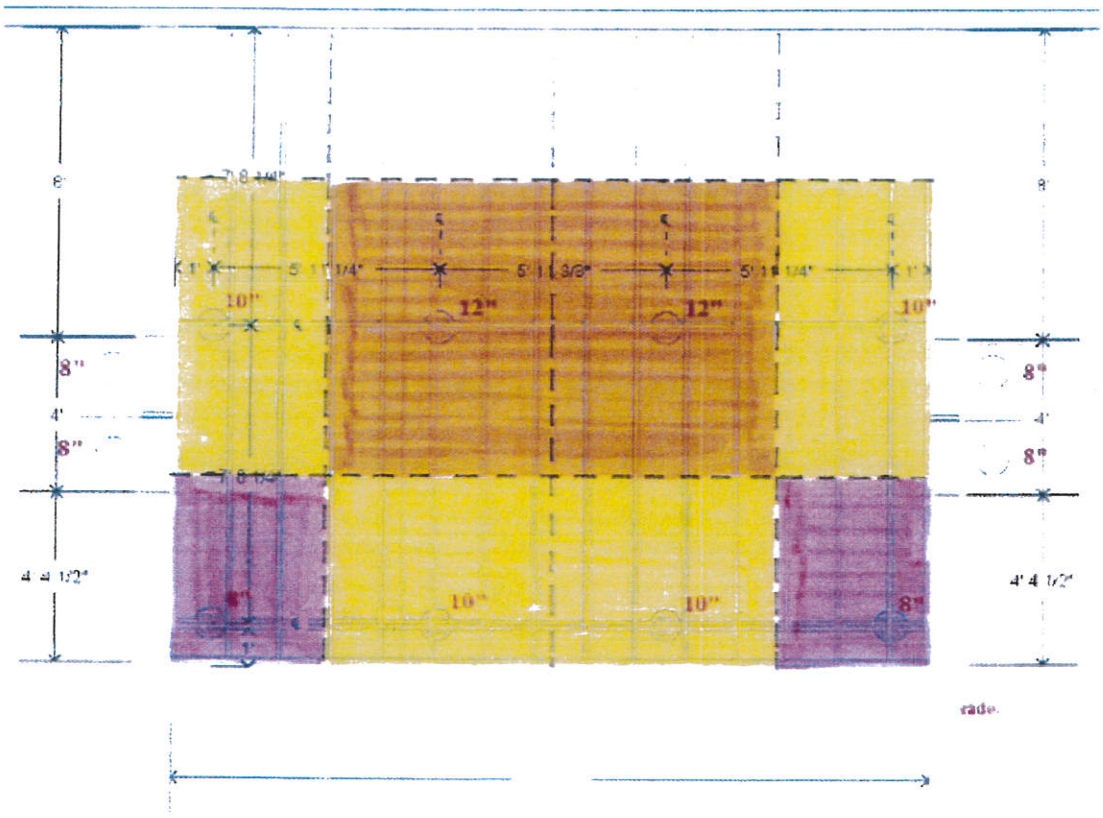

20'
24'
TRIB. WIDTH
GIRDER
C2
J1
JOISTS
12'
TRIB. WIDTH
G1
G2
C1
14'
TRIB. AREA FOR G1
J2
C3
TYP COLUMN
TRIB. AREA FOR J2

Joists

Framing Plan



SECTION AM110
STAIRS

AM110.1 Stairs shall be constructed per Figure AM110. Stringer spans shall be no greater than 7 foot span between supports. Spacing between stringers shall be based upon decking material used per AM107.1. Each Stringer shall have minimum $3^1/_2$ inches between step cut and back of stringer. If used, suspended headers shall shall be attached with $^3/_8$ inch galvinized bolts with nuts and washers to securely support stringers at the top.

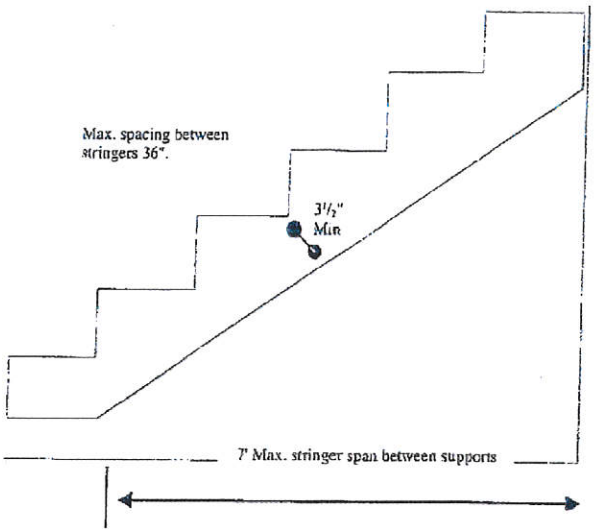
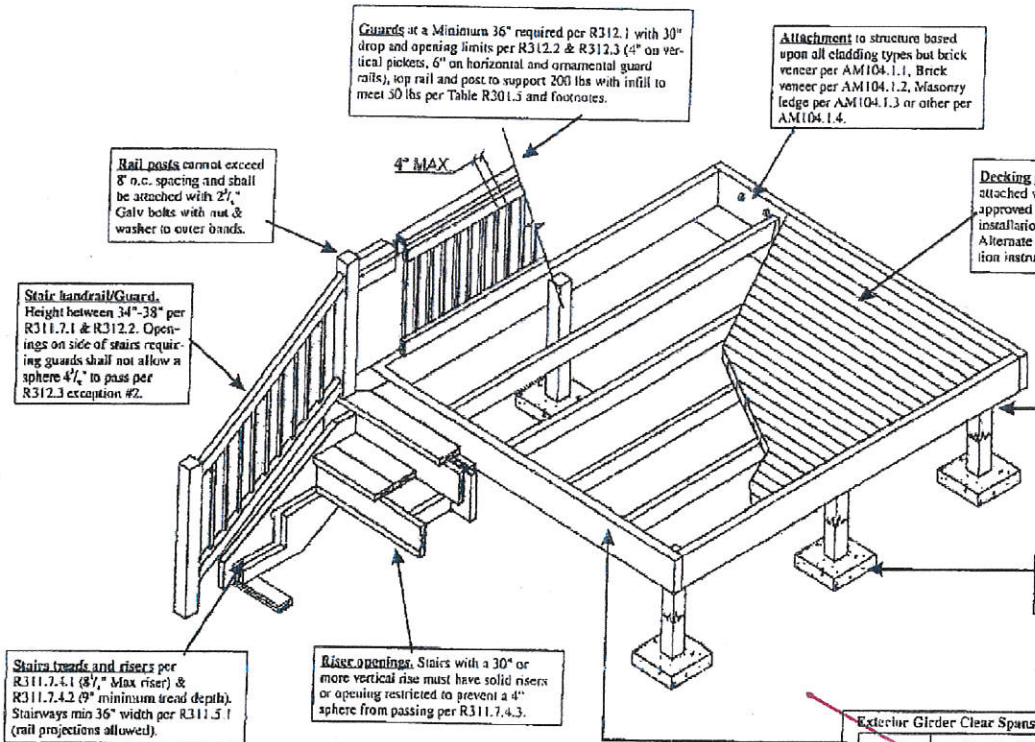


FIGURE AM110

SECTION AM111
HANDRAILS, GUARDS AND GENERAL

AM111.1 Handrails, guards and general. Deck handrails, guards and general construction shall be per Figure AM111.



Exterior Girder Clear Spans

Deck Width	Nominal Lumber Size			
	2x6	2x8	2x10	2x12
20' (2ply)	3-11	5-0	6-1	7-1
20' (3ply)	—	5-3	7-7	8-10
20' (4ply)	—	—	8-9	10-2

*Partial reproduction of Table R502.5(1) at 30 ground snow load and roof ceiling and 1 clear span floor. Deck width is 20' or less measured in the direction of joists span. Splices in plys must break over bearing supports.

SEE TABLE, AMMENDED, R502.5(3), ATTACHED →

FIGURE AM111

CHAPTER 5
FLOORS

SECTION R501
GENERAL

R501.1 Application. The provisions of this chapter shall control the design and construction of the floors for all buildings including the floors of *attic* spaces used to house mechanical or plumbing fixtures and *equipment*.

R501.2 Requirements. Floor construction shall be capable of accommodating all loads according to Section R301 and of transmitting the resulting loads to the supporting structural elements.

SECTION R502
WOOD FLOOR FRAMING

R502.1 Identification. Load-bearing dimension lumber for joists, beams and girders shall be identified by a grade *mark* of a lumber grading or inspection agency that has been *approved* by an accreditation body that complies with DOC PS 20. In lieu of a grade *mark*, a certificate of inspection issued by a lumber grading or inspection agency meeting the requirements of this section shall be accepted.

R502.1.1 Preservative-treated lumber. Preservative treated dimension lumber shall also be identified as required by Section R319.1.

R502.1.2 Blocking and subflooring. Blocking shall be a minimum of utility grade lumber. Subflooring may be a minimum of utility grade lumber or No. 4 common grade boards.

R502.1.3 End-jointed lumber. *Approved* end-jointed lumber identified by a grade *mark* conforming to Section R502.1 may be used interchangeably with solid-sawn members of the same species and grade.

R502.1.4 Prefabricated wood I-joists. Structural capacities and design provisions for prefabricated wood I-joists shall be established and monitored in accordance with ASTM D 5055.

R502.1.5 Structural glued laminated timbers. Glued laminated timbers shall be manufactured and identified as required in ANSI/AITC A190.1 and ASTM D 3737.

R502.1.6 Structural log members. Stress grading of structural log members of nonrectangular shape, as typically used in log buildings, shall be in accordance with ASTM D 3957. Such structural log members shall be identified by the grade *mark* of an *approved* lumber grading or inspection agency. In lieu of a grade *mark* on the material, a certificate of inspection as to species and grade issued by a lumber-grading or inspection agency meeting the requirements of this section shall be permitted to be accepted.

R502.1.7 Exterior wood/plastic composite deck boards. Wood/plastic composites used in exterior deck boards shall comply with the provisions of Section R317.4.

R502.2 Design and construction. Floors shall be designed and constructed in accordance with the provisions of this chapter, Figure R502.2 and Sections R317 and R318 or in accordance with AF&PA/NDS.

R502.2.1 Framing at braced wall lines. A load path for lateral forces shall be provided between floor framing and *braced wall panels* located above or below a floor, as specified in Section R602.10.6.

R502.2.2 Decks. Where supported by attachment to an exterior wall, decks shall be positively anchored to the primary structure and designed for both vertical and lateral loads as applicable. Such attachment shall not be accomplished by the use of toenails or nails subject to withdrawal. Where positive connection to the primary building structure cannot be verified during inspection, decks shall be self-supporting. For decks with cantilevered framing members, connections to exterior walls or other framing members, shall be designed and constructed to resist uplift resulting from the full live load specified in Table R301.5 acting on the cantilevered portion of the deck. Exterior decks shall be permitted to be constructed in accordance with Appendix M.

R502.2.2.1 Deck ledger connection to band joist. Deleted.

R502.2.2.1.1 Placement of lag screws or bolts in deck ledgers. Deleted.

R502.2.2.2 Alternate deck ledger connections. Deleted.

R502.2.2.3 Deck lateral load connection. Deleted.

R502.2.2.4 Exterior wood/plastic composite deck boards. Deleted.

R502.3 Allowable joist spans. Spans for floor joists shall be in accordance with Tables R502.3.1(1) and R502.3.1(2). For other grades and species and for other loading conditions, refer to the AF&PA Span Tables for Joists and Rafters.

R502.3.1 Sleeping areas and attic joists. Table R502.3.1(1) shall be used to determine the maximum allowable span of floor joists that support sleeping areas and *attics* that are accessed by means of a fixed stairway in accordance with Section R311.7 provided that the design live load does not exceed 30 pounds per square foot (1.44 kPa) and the design dead load does not exceed 20 pounds per square foot (0.96 kPa). The allowable span of ceiling joists that support *attics* used for limited storage or no storage shall be determined in accordance with Section R802.4.

R502.3.2 Other floor joists. Table R502.3.1(2) shall be used to determine the maximum allowable span of floor joists that support all other areas of the building, other than sleeping rooms and *attics*, provided that the design live load does not exceed 40 pounds per square foot (1.92 kPa) and the design dead load does not exceed 20 pounds per square foot (0.96 kPa).

TABLE 2308.8(2)
FLOOR JOIST SPANS FOR COMMON LUMBER SPECIES
(Residential Living Areas, Live Load = 40 psf, L/Δ = 360)

JOIST SPACING (inches)	SPECIES AND GRADE		DEAD LOAD = 10 psf				DEAD LOAD = 20 psf			
			2x6	2x8	2x10	2x12	2x6	2x8	2x10	2x12
			Maximum floor joist spans							
			(ft. - in.)	(ft. - in.)	(ft. - in.)	(ft. - in.)	(ft. - in.)	(ft. - in.)	(ft. - in.)	(ft. - in.)
12	Douglas Fir-Larch	SS	11-4	15-0	19-1	23-3	11-4	15-0	19-1	23-3
	Douglas Fir-Larch	#1	10-11	14-5	18-5	22-0	10-11	14-2	17-4	20-1
	Douglas Fir-Larch	#2	10-9	14-2	17-9	20-7	10-6	13-3	16-3	18-10
	Douglas Fir-Larch	#3	8-8	11-0	13-5	15-7	7-11	10-0	12-3	14-3
	Hem-Fir	SS	10-9	14-2	18-0	21-11	10-9	14-2	18-0	21-11
	Hem-Fir	#1	10-6	13-10	17-8	21-6	10-6	13-10	16-11	19-7
	Hem-Fir	#2	10-0	13-2	16-10	20-4	10-0	13-1	16-0	18-6
	Hem-Fir	#3	8-8	11-0	13-5	15-7	7-11	10-0	12-3	14-3
	Southern Pine	SS	11-2	14-8	18-9	22-10	11-2	14-8	18-9	22-10
	Southern Pine	#1	~~10-11~~	~~14-2~~	~~18-0~~	~~21-11~~	~~10-11~~	~~14-2~~	~~16-11~~	~~20-1~~
	Southern Pine	#2	~~10-9~~	~~13-6~~	~~16-2~~	~~19-1~~	~~10-9~~	~~12-6~~	~~14-9~~	~~17-5~~
	Southern Pine	#3	~~8-8~~	~~11-0~~	~~12-6~~	~~14-9~~	~~7-6~~	~~9-5~~	~~11-5~~	~~13-6~~
	Spruce-Pine-Fir	SS	10-6	13-10	17-8	21-6	10-6	13-10	17-8	21-6
	Spruce-Pine-Fir	#1	10-3	13-6	17-3	20-7	10-3	13-3	16-3	18-10
	Spruce-Pine-Fir	#2	10-3	13-6	17-3	20-7	10-3	13-3	16-3	18-10
	Spruce-Pine-Fir	#3	8-8	11-0	13-5	15-7	7-11	10-0	12-3	14-3
16	Douglas Fir-Larch	SS	10-4	13-7	17-4	21-1	10-4	13-7	17-4	21-0
	Douglas Fir-Larch	#1	9-11	13-1	16-5	19-1	9-8	12-4	15-0	17-5
	Douglas Fir-Larch	#2	9-9	12-7	15-5	17-10	9-1	11-6	14-1	16-3
	Douglas Fir-Larch	#3	7-6	9-6	11-8	13-6	6-10	8-8	10-7	12-4
	Hem-Fir	SS	9-9	12-10	16-5	19-11	9-9	12-10	16-5	19-11
	Hem-Fir	#1	9-6	12-7	16-0	18-7	9-6	12-0	14-8	17-0
	Hem-Fir	#2	9-1	12-0	15-2	17-7	8-11	11-4	13-10	16-1
	Hem-Fir	#3	7-6	9-6	11-8	13-6	6-10	8-8	10-7	12-4
	Southern Pine	SS	10-2	13-4	17-0	20-9	10-2	13-4	17-0	20-9
	Southern Pine	#1	~~9-11~~	~~13-1~~	~~16-9~~	~~20-1~~	~~9-11~~	~~13-1~~	~~16-4~~	~~19-6~~
	Southern Pine	#2	~~9-9~~	~~12-10~~	~~16-1~~	~~18-10~~	~~9-6~~	~~12-4~~	~~13-8~~	~~17-2~~
	Southern Pine	#3	~~8-1~~	~~10-3~~	~~12-2~~	~~14-6~~	~~7-4~~	~~9-5~~	~~11-1~~	~~13-2~~
	Spruce-Pine-Fir	SS	9-6	12-7	16-0	19-6	9-6	12-7	16-0	19-6
	Spruce-Pine-Fir	#1	9-4	12-3	15-5	17-10	9-1	11-6	14-1	16-3
	Spruce-Pine-Fir	#2	9-4	12-3	15-5	17-10	9-1	11-6	14-1	16-3
	Spruce-Pine-Fir	#3	7-6	9-6	11-8	13-6	6-10	8-8	10-7	12-4
19.2	Douglas Fir-Larch	SS	9-8	12-10	16-4	19-10	9-8	12-10	16-4	19-2
	Douglas Fir-Larch	#1	9-4	12-4	15-0	17-5	8-10	11-3	13-8	15-11
	Douglas Fir-Larch	#2	9-1	11-6	14-1	16-3	8-3	10-6	12-10	14-10
	Douglas Fir-Larch	#3	6-10	8-8	10-7	12-4	6-3	7-11	9-8	11-3
	Hem-Fir	SS	9-2	12-1	15-5	18-9	9-2	12-1	15-5	18-9
	Hem-Fir	#1	9-0	11-10	14-8	17-0	8-8	10-11	13-4	15-6
	Hem-Fir	#2	8-7	11-3	13-10	16-1	8-2	10-4	12-8	14-8
	Hem-Fir	#3	6-10	8-8	10-7	12-4	6-3	7-11	9-8	11-3
	Southern Pine	SS	9-6	12-7	16-0	19-6	9-6	12-7	16-0	19-6
	Southern Pine	#1	~~9-4~~	~~12-3~~	~~15-9~~	~~19-2~~	~~9-4~~	~~12-3~~	~~15-5~~	~~17-9~~
	Southern Pine	#2	~~9-2~~	~~12-1~~	~~15-8~~	~~17-2~~	~~8-8~~	~~11-3~~	~~13-8~~	~~15-8~~
	Southern Pine	#3	~~7-4~~	~~9-5~~	~~11-1~~	~~13-2~~	~~6-3~~	~~7-7~~	~~9-7~~	~~11-3~~
	Spruce-Pine-Fir	SS	9-0	11-10	15-1	18-4	9-0	11-10	15-1	17-9
	Spruce-Pine-Fir	#1	8-9	11-6	14-1	16-3	8-3	10-6	12-10	14-10
	Spruce-Pine-Fir	#2	8-9	11-6	14-1	16-3	8-3	10-6	12-10	14-10
	Spruce-Pine-Fir	#3	6-10	8-8	10-7	12-4	6-3	7-11	9-8	11-3

(continued)

TABLE 2308.8(2)—continued
FLOOR JOIST SPANS FOR COMMON LUMBER SPECIES
(Residential Living Areas, Live Load = 40 psf, L/Δ = 360)

JOIST SPACING (inches)	SPECIES AND GRADE		DEAD LOAD = 10 psf				DEAD LOAD = 20 psf			
			2x6	2x8	2x10	2x12	2x6	2x8	2x10	2x12
			Maximum floor joist spans							
			(ft. - in.)	(ft. - in.)	(ft. - in.)	(ft. - in.)	(ft. - in.)	(ft. - in.)	(ft. - in.)	(ft. - in.)
24	Douglas Fir-Larch	SS	9-0	11-11	15-2	18-5	9-0	11-11	14-9	17-1
	Douglas Fir-Larch	#1	8-8	11-0	13-5	15-7	7-11	10-0	12-3	14-3
	Douglas Fir-Larch	#2	8-1	10-3	12-7	14-7	7-5	9-5	11-6	13-4
	Douglas Fir-Larch	#3	6-2	7-9	9-6	11-0	5-7	7-1	8-8	10-1
	Hem-Fir	SS	8-6	11-3	14-4	17-5	8-6	11-3	14-4	16-10[a]
	Hem-Fir	#1	8-4	10-9	13-1	15-2	7-9	9-9	11-11	13-10
	Hem-Fir	#2	7-11	10-2	12-5	14-4	7-4	9-3	11-4	13-1
	Hem-Fir	#3	6-2	7-9	9-6	11-0	5-7	7-1	8-8	10-1
	Southern Pine	SS	8-10	11-8	14-11	18-1	8-10	11-8	14-11	~~18-1~~ ~~18-0~~
	Southern Pine	#1	~~8-8~~ ~~8-6~~	~~11-5~~ ~~11-3~~	~~14-7~~ ~~13-1~~	~~17-5~~ ~~15-7~~	~~8-8~~ ~~8-1~~	~~11-3~~ ~~10-3~~	~~13-1~~ ~~12-0~~	~~15-11~~ ~~14-3~~
	Southern Pine	#2	~~8-6~~ ~~7-7~~	~~11-0~~ ~~9-8~~	~~13-1~~ ~~11-5~~	~~15-5~~ ~~13-6~~	~~7-9~~ ~~7-0~~	~~10-0~~ ~~8-10~~	~~12-0~~ ~~10-5~~	~~14-0~~ ~~12-1~~
	Southern Pine	#3	~~6-7~~ ~~5-9~~	~~8-5~~ ~~7-3~~	~~9-11~~ ~~8-10~~	~~11-10~~ ~~10-5~~	~~6-0~~ ~~5-3~~	~~7-8~~ ~~6-8~~	~~9-1~~ ~~8-1~~	~~10-9~~ ~~9-6~~
	Spruce-Pine-Fir	SS	8-4	11-0	14-0	17-0	8-4	11-0	13-8	15-11
	Spruce-Pine-Fir	#1	8-1	10-3	12-7	14-7	7-5	9-5	11-6	13-4
	Spruce-Pine-Fir	#2	8-1	10-3	12-7	14-7	7-5	9-5	11-6	13-4
	Spruce-Pine-Fir	#3	6-2	7-9	9-6	11-0	5-7	7-1	8-8	10-1

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 47.8 N/m^2.

a. End bearing length shall be increased to 2 inches.

2. Required yards and other open areas provided for one lot or building shall not be considered as providing yard space for another building or lot.

3. Required yards shall be calculated from the adjacent property line or street right-of-way. If a new right-of-way width has been established by the adoption of an official thoroughfare planning document, then the yard requirement shall be measured from the proposed right-of-way line.

B. Encroachments into Required Yards

The following encroachment standards shall apply, so long as they do not extend in any easements:

1. Chimneys, pre-fabricated chimneys, flues, or smokestacks can extend into yard spaces but shall not occupy more than 30 square feet of the required yard space.
2. Sills and ornamental features can project up to two feet into any yard.
3. Fire escapes can project up to eight feet into any required yard. Fire escapes in the DD District are be permitted to extend beyond the property line.
4. Cornices, eaves, and awnings can extend up to five feet into any required yard, but shall remain at least two feet from the property line, except on zero lot line homes.
5. Marquee signs can extend into yard spaces in conformance with standards found in the Sec. 11.6, Signs Requiring Permits.
6. Pedestrian bridges, breezeways, building connections, and supports of these structures can extend into required yards upon findings by the approving authority that the connecting feature is necessary to provide safe pedestrian access or to improve transit access.
7. Security gates and guard stations can be located within any required yard.
8. Decks, uncovered terraces, and at-grade patios can extend up to four feet into any required side yard, or up to eight feet into any required street yard, or within four feet of a rear property line.
9. Uncovered steps and handicapped access ramps can be located within any yard.
10. Except in Design districts, bay windows, entrances, balconies, and similar features that are less than ten feet wide can extend up to one and one-half feet into any required yard, but shall remain at least six feet from the property line.
11. In Design districts, balconies and bay windows that extend out from the building are not required to meet step-back or build-to line requirements.
12. Mechanical equipment for residential uses, such as HVAC units, can extend into any required side yard but shall remain at least six feet from the property line.
13. Trellises and pergolas can be located within any required yard.

6.13.4 Density

Other than calculating the density bonus area pursuant to paragraph 6.4.3A, Major Roadway Density Bonus Area, all existing right-of-way and dedications to expand existing right-of-way shall be excluded from the calculation of the area of a project for density purposes. Right-of-